

# 2018 Interoperability Conference Communicating During Damage Assessment for the Mid-Michigan Flooding Incident

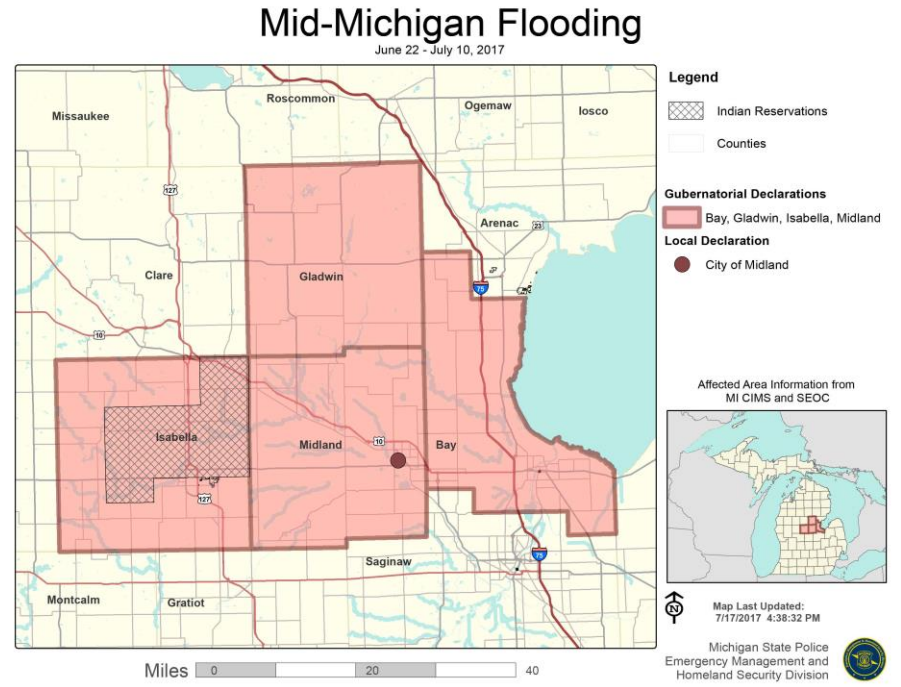


MICHIGAN STATE POLICE  
EMERGENCY MANAGEMENT & HOMELAND SECURITY DIVISION

MATT MCCORMICK | 2/23/2018

# Outline

- Introduction
- Background on Statewide Flooding in Mid-Michigan
- Damage Assessment
- Communications
- Damage Assessment Application
- Concluding Remarks



# Introduction

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Matt McCormick

- Analyst with MSP Emergency Management Homeland Security Division
  - Operations Management Section
  - Geographic Information System (GIS) programmer
  - Michigan Critical Incident Management System (MI CIMS) programmer
- KE8CRV, General Class License
- Former Volunteer Firefighter/EMT



# Statewide Flooding

*6/21/17 to 6/24/17*

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# Statewide Flooding

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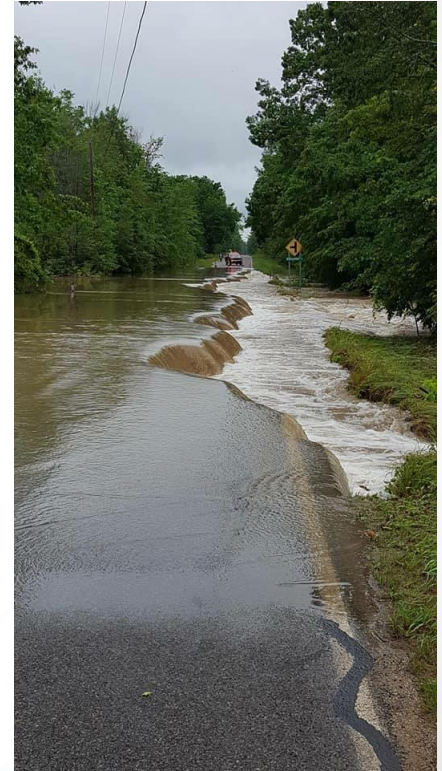
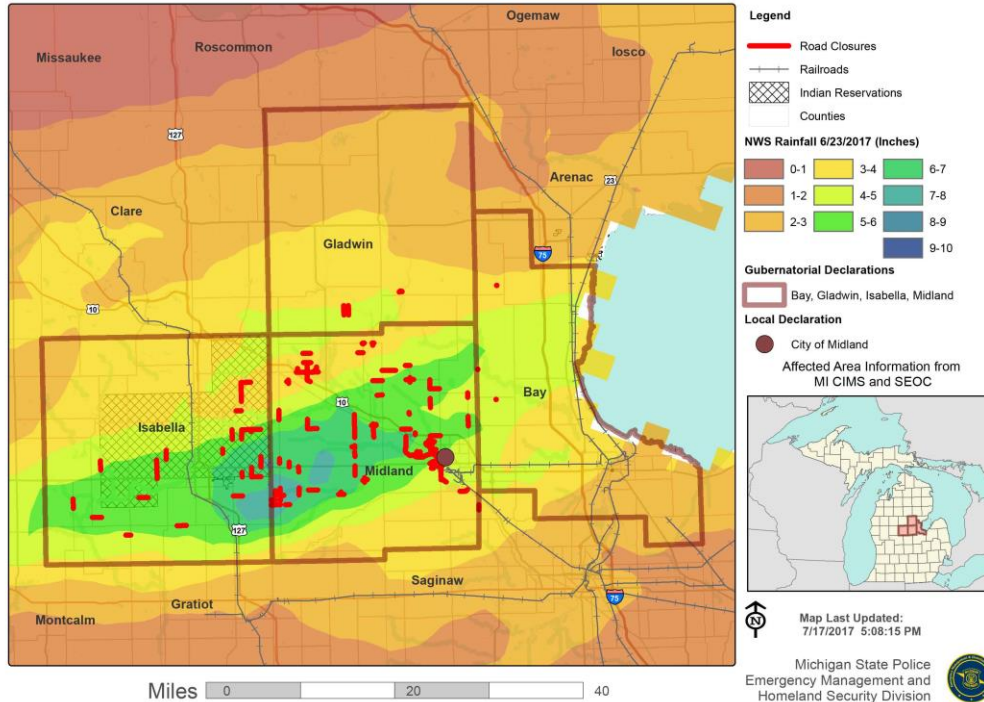


[WWW.MICHIGAN.GOV/EMHSD](http://WWW.MICHIGAN.GOV/EMHSD) | @MICHEMHS

# Statewide Flooding

## Transportation Closures

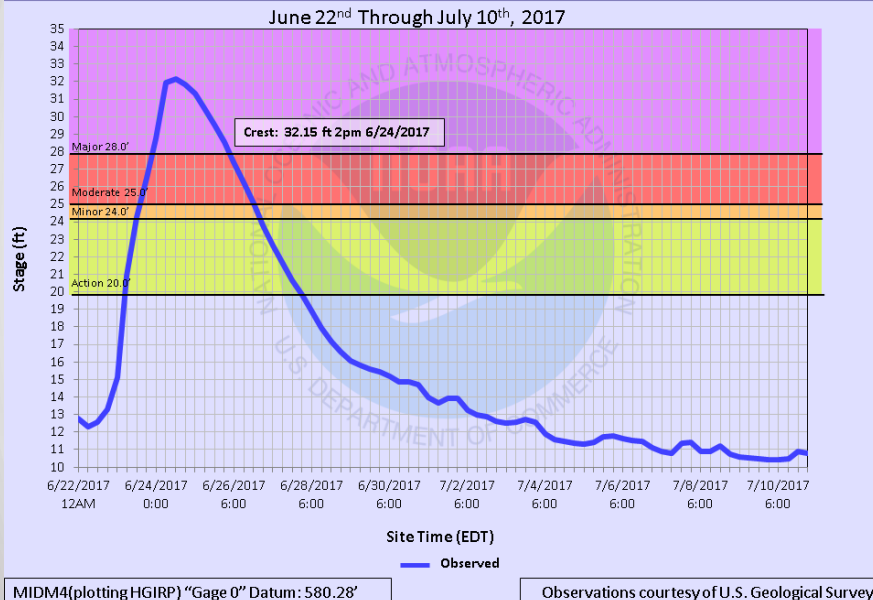
Mid-Michigan Flooding



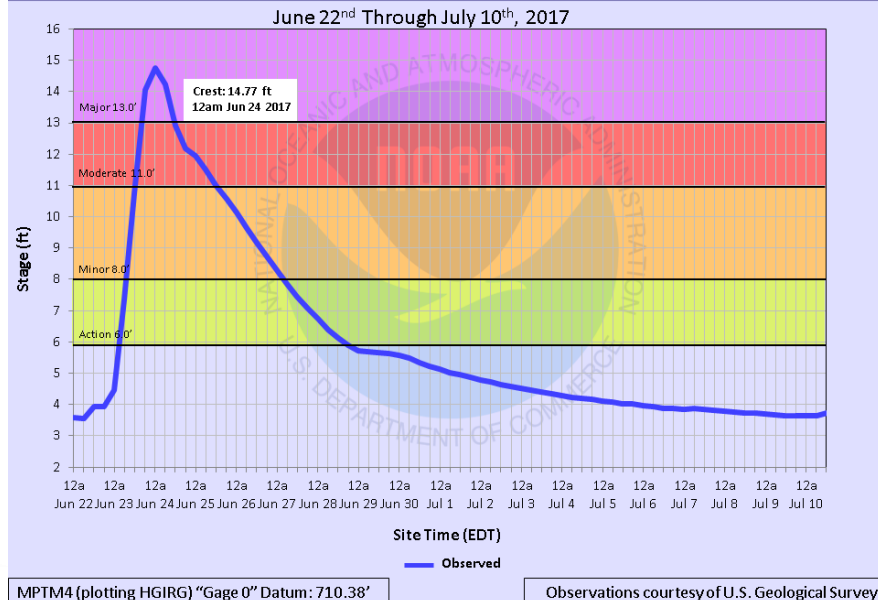


# Statewide Flooding

## TITTABAWASSEE RIVER AT MIDLAND



## CHIPPEWA RIVER BELOW MT. PLEASANT



# Damage Assessment

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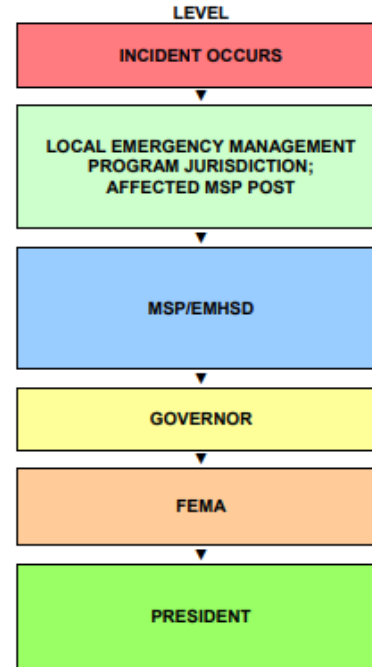




# Damage Assessment (DA)

## Process Overview

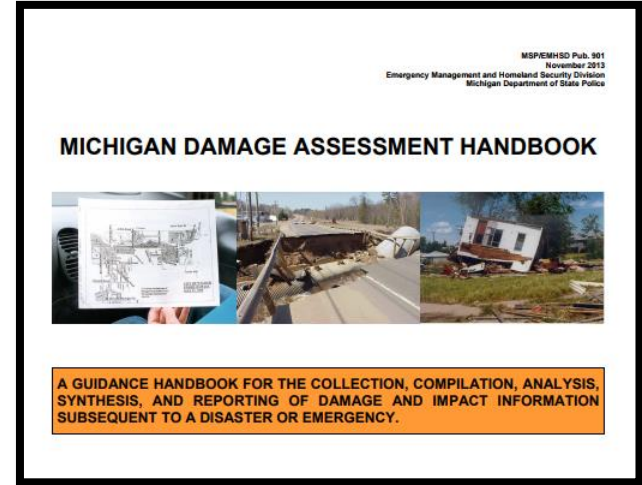
- State of Emergency
- Local DA
  - 72 Hour Timeframe
  - Extension
- Preliminary Damage Assessment
- State/Federal Verification



# Damage Assessment

## Process Overview

- Damage Assessment Handbook
- Damage Assessment Training
- Public Assistance (PA) vs Individual Assistance (IA)
- DA Teams (Local, State, Federal, Private)
- Equipment: Cameras, Radios, Clipboards, Forms, Maps, iPad Tablets, 800 Mhz Radio, Cell Phones
- Michigan Critical Incident Management System (MI CIMS)



# Damage Assessment

## Individual Assistance



**AFFECTED**



**MAJOR**



**MINOR**



**DESTROYED**



# Damage Assessment

## Public Assistance

### Categories

- A** Debris Removal
- B** Emergency Protective Measures
- C** Roads and Bridges
- D** Water Control Facilities
- E** Public Buildings and Equipment
- F** Public Utilities
- G** Parks and Recreation Facilities



# DA Application

## MI CIMS Damage Assessment Board

EM Program ^	# Destroyed ⇅	# Major Damage ⇅	# Minor Damage ⇅	# Affected ⇅	# Inaccessible ⇅	Estimated Dollar Loss (Private) ⇅	PA - Emergency Work A & B ⇅	PA - Permanent Work C - G ⇅	Estimated Dollar Loss (Public) ⇅	Total Estimated Dollar Loss ⇅	Last Updated ⇅	Details
County of Bay	0	11	134	270	0	\$2,020,000	\$0	\$1,000,000	\$1,000,000	\$3,020,000	07/05/2017 16:30:27	<a href="#">Details</a>
County of Clare	0	0	0	1	0	\$10,000	\$0	\$150,000	\$150,000	\$160,000	06/28/2017 08:53:57	<a href="#">Details</a>
County of Gladwin	0	7	8	37	0	\$76,950	\$100,000	\$323,896	\$423,896	\$500,846	07/14/2017 12:05:35	<a href="#">Details</a>
County of Isabella	7	316	855	537	0	\$16,063,885	\$190,000	\$26,804,067	\$26,994,067	\$43,057,952	07/03/2017 12:13:22	<a href="#">Details</a>
County of Mecosta	0	2	0	4	0	\$34,830	\$0	\$120,000	\$120,000	\$154,830	06/28/2017 11:22:27	<a href="#">Details</a>
County of Midland	57	381	1,577	564	0	\$99,971,918	\$655,831	\$15,848,000	\$16,503,831	\$116,475,749	07/13/2017 17:53:12	<a href="#">Details</a>
County of Saginaw	0	2	34	56	0	\$550,000	\$10,456	\$106,000	\$116,456	\$666,456	06/30/2017 00:09:49	<a href="#">Details</a>
MDNR	0	0	0	0	0	\$0	\$0	\$24,966	\$24,966	\$24,966	07/10/2017 13:57:59	<a href="#">Details</a>
MDOT	0	0	0	0	0	\$0	\$10,000	\$59,462	\$69,462	\$69,462	08/03/2017 08:18:31	<a href="#">Details</a>
	64	719	2,608	1,469	0	\$ 118,727,583	\$966,287	\$44,436,391	\$45,402,678	\$164,130,261		





# Communications

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# Communications

- Incident Command System
- Logistics Section in State Emergency Operations Center
- Communications Unit Leader (COML)

Incident Organization Chart (ICS 207)

Incident Name 2017-08-23-Statewide-Flooding	Operational Period Date From 08/27/2017 Time From 08:00:00	Date To 08/29/2017 Time To 08:00:00
<p>Organization Chart</p> <pre> graph TD     Logistics[Logistics Section] --&gt; Supply[Supply Unit Leader Wendy Galbreath]     Logistics --&gt; Facilities[Facilities Unit Leader Rich Law]     Logistics --&gt; Comms[Communications Unit Leader Ralph Liddle]     Logistics --&gt; Food[Food Unit Leader Sheri Loader]                     </pre>		
<p>Prepared by Name: Henrik Hollander Signature: _____</p> <p>Position/Title: Planning Section Chief Date/Time: 08/28/2017 16:15:00</p>		

Incident Radio Communications Plan (ICS 205)

Incident Name 2017-08-23-Statewide-Flooding		Operational Period		Date From 08/27/2017 Time From 08:00:00	Date To 08/29/2017 Time To 08:00:00				
Basic Radio Channel Use									
Zone Grp.	Ch #	Function	Channel Name/ Trunked Radio System Talkgroup	Assignment	Rx Freq N or W	RX Tone/NAC	TX Freq N or W	TX Tone/NAC	Mode (A, D, or M)
MPSCS Zone H	28	Command	MPSCS Event 28	Command					
<p>Remarks</p> <p>This Special Event Channel will become active on 8/28/2017 replacing H30. NCC will coordinate switch over with Isabella County Central Dispatch.</p>									
MPSCS Zone H	25	Damage Assessment	MPSCS Event 25	Damage Assessment					
<p>Remarks</p> <p>This channel will become active on 8/28/2017 replacing H27. NCC will coordinate switch over with Isabella County Central Dispatch.</p>									
MPSCS Zone H	30	Command	MPSCS Event 30	Command					
<p>Remarks</p> <p>This channel ends on 8/28. NCC will coordinate switch over with Isabella County Central Dispatch.</p>									
MPSCS Zone H	27	Damage Assessment	MPSCS Event 27	Damage Assessment					
<p>Remarks</p> <p>This channel ends on 8/28. NCC will coordinate switch over with Isabella County Central Dispatch.</p>									
<p>Special Instructions</p> <p>On 8/28/2017, Special Event Channels H27 and H30 are being replaced by Special Event Channels H25 and H28.</p>									
<p>Prepared by</p> <p>Name: Ralph Liddle Signature: _____</p> <p>Position/Title: Communications Leader Date/Time: 08/28/2017 11:55:05</p>									





# Communications

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## Radio

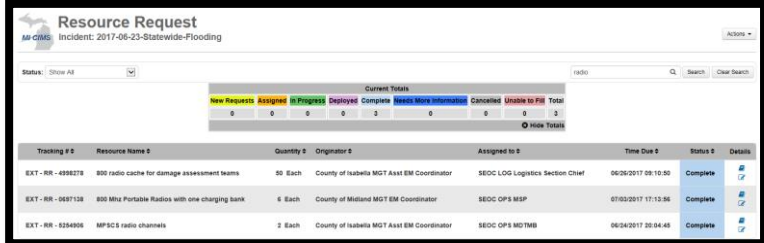
- Michigan's Public Safety Communication System (MPSCS)
- MPSCS NCC and Event Channel Coordination
- Communication on Wheels (COW)
- Site on Wheels (SOW)
- 800 Mhz Radio Cache (Emergency Only)
- All "Deployable Resources" were available but only some needed to be used



# Communications

## Radio

- Michigan State Police Communications Section
- Radio Cache
- Just In Time (JIT) training
- Technical Support
  - MSP Communications (800mhz, SIM cards)
  - EMHSD (Wifi)



The screenshot shows the 'Resource Request' interface for incident '2017-06-23-Statewide-Flooding'. It includes a status filter set to 'Show All', a search bar, and a 'Current Totals' bar with the following counts: New Requests (0), Assigned (0), In Progress (0), Deployed (0), Complete (2), Needs More Information (0), Cancelled (0), Unable to Fill (0), and Total (2). Below this is a table with columns: Tracking #, Resource Name, Quantity, Originator, Assigned to, Time Due, Status, and Details. Three rows are listed, all with a status of 'Complete'.

Tracking #	Resource Name	Quantity	Originator	Assigned to	Time Due	Status	Details
EXT - RR - 4996276	800 radio cache for damage assessment teams	80 Each	County of Isabella MGT Asst EM Coordinator	SEOC LOG Logistics Section Chief	06/26/2017 09:10:50	Complete	
EXT - RR - 0687128	800 Mhz Portable Radios with one charging bank	6 Each	County of Midland MGT EM Coordinator	SEOC OP 3 MSP	07/03/2017 17:13:56	Complete	
EXT - RR - 5254906	MPPSC 1 radio channels	2 Each	County of Isabella MGT Asst EM Coordinator	SEOC OP 3 MDTMB	06/24/2017 22:04:45	Complete	



# Communications

## Data

- Damage Assessment App / MI CIMS / Email
- Pre-Deployment
  - Road Closures
  - Critical Infrastructure
  - Hospitals and MMR Ambulances
  - Shelters
  - Parcels and Residences
  - Imagery



Shell Station in Coleman



# Communications

## Imagery

- Helicopter Video
- Orthomosaic Imagery
- Unmanned Aerial System Imagery
- Satellite Imagery
- MAPS in MI CIMS

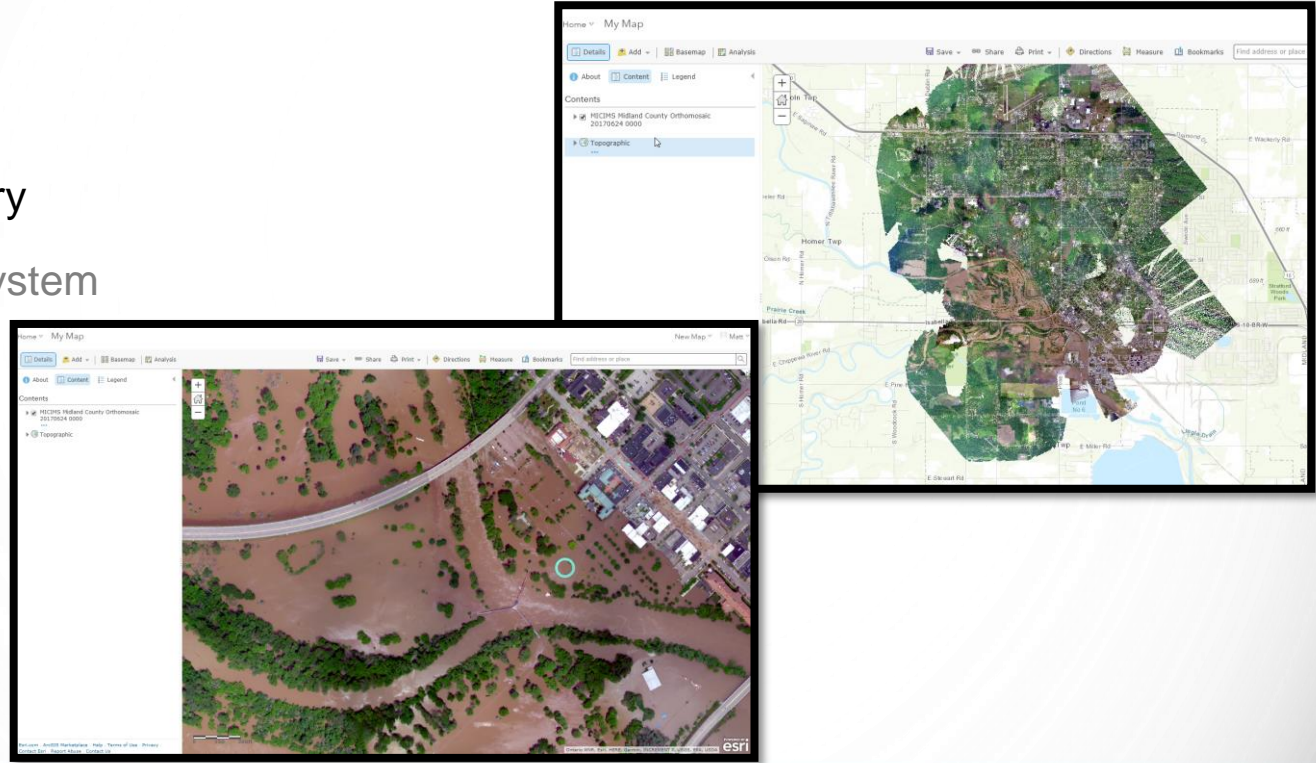




# Communications

## Imagery

- ✓ Helicopter Video
- Orthomosaic Imagery
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# Communications

## Imagery

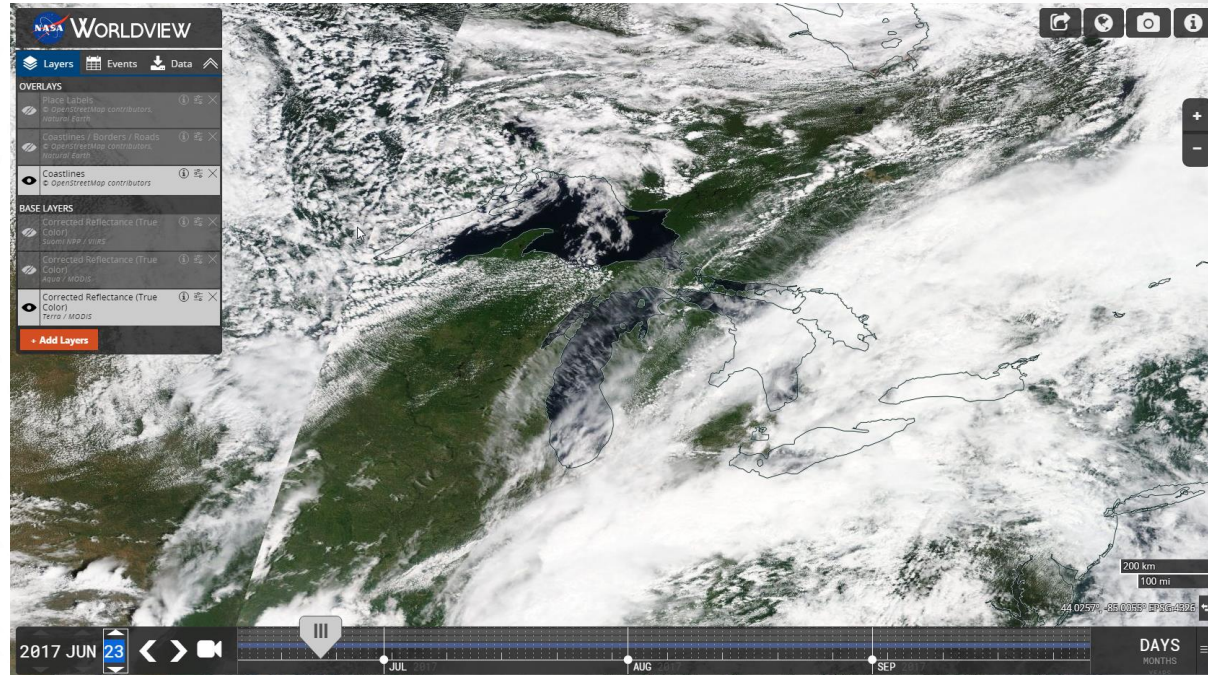
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# Communications

## Imagery

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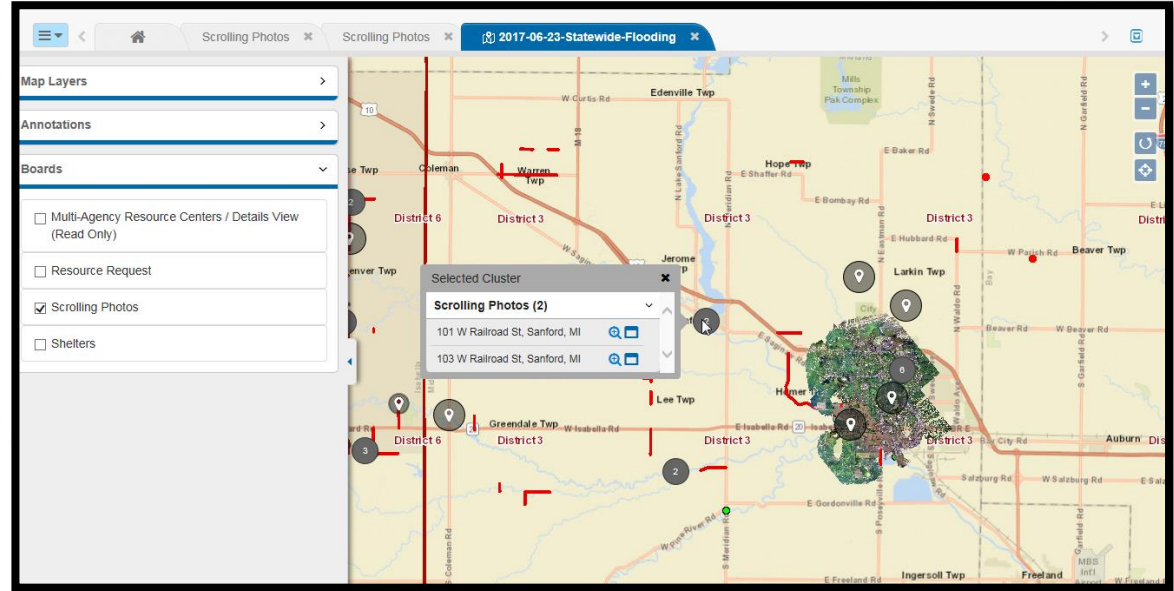




# Communications

## Imagery

- ✓ Helicopter Video
- ✓ Orthomosaic Imagery
- ✓ Unmanned Aerial System Imagery
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- MAPS in MI CIMS



# DA Application

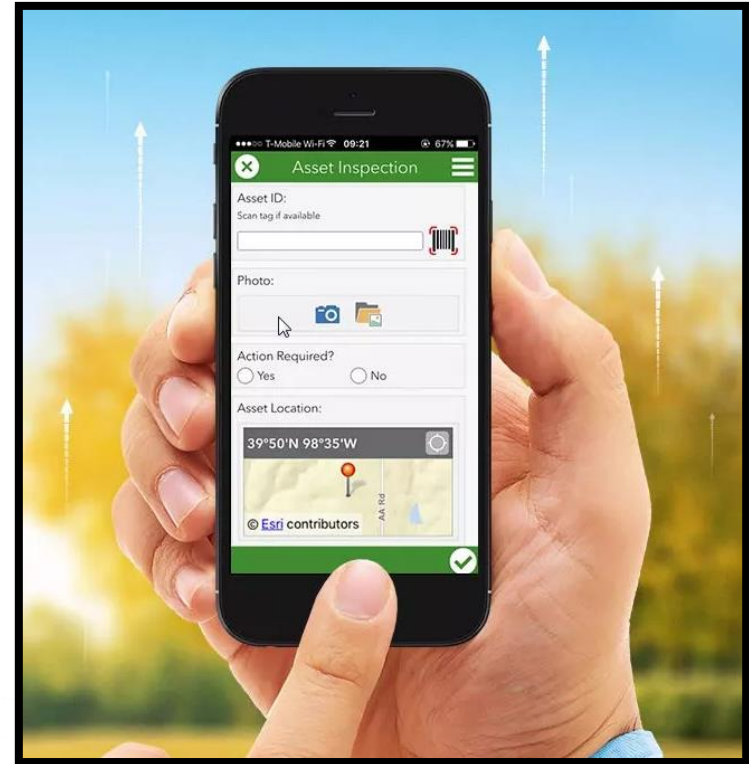
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# DA Application

## Survey123

- ESRI: <https://survey123.arcgis.com/>
- Geotagged Photos
- Logic driven questions
- Drop down lists
- Latitude/longitude
- Audio (not used for DA)
- QR codes (not used for DA)



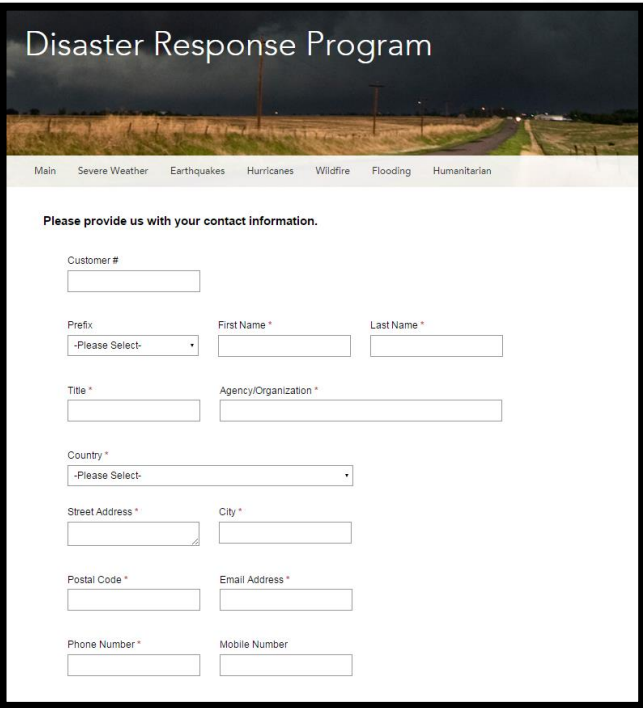
# DA Application

## ESRI Disaster Response Program

Contact for help with:

- Credits and user accounts
- App development/support
- Training

<http://www.esri.com/services/disaster-response>



The screenshot shows the 'Disaster Response Program' registration page. At the top is a header image of a field under a dark sky with the title 'Disaster Response Program'. Below the image is a navigation menu with links: Main, Severe Weather, Earthquakes, Hurricanes, Wildfire, Flooding, and Humanitarian. The main content area is titled 'Please provide us with your contact information.' and contains a registration form with the following fields:

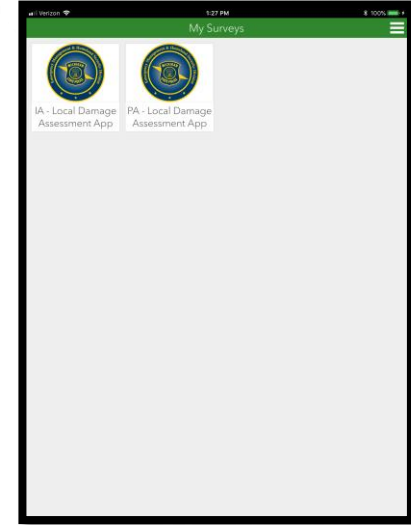
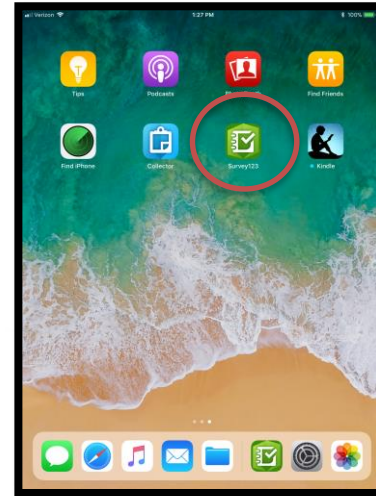
- Customer # (text input)
- Prefix (dropdown menu with '-Please Select-')
- First Name \* (text input)
- Last Name \* (text input)
- Title \* (text input)
- Agency/Organization \* (text input)
- Country \* (dropdown menu with '-Please Select-')
- Street Address \* (text input)
- City \* (text input)
- Postal Code \* (text input)
- Email Address \* (text input)
- Phone Number \* (text input)
- Mobile Number (text input)



# DA Application

## Interoperability

- iOS, Android, Windows
- Phone, Tablet, Desktop
- Online and Offline Usage
- Formats common in Geographic Information Systems (GIS)



# DA Application

## Individual Assistance (IA)

- What caused the damage?
- Dwelling Type
- Level of damage
  - Affected, Minor, Major, Destroyed
- Photos
- Location

The image displays three screenshots of the 'Local Preliminary Damage Assessment - IA' mobile application. The top-left screenshot shows the 'What caused the damage?' section with checkboxes for Drought, Earthquake, Landslide, Mudslide, Terrorism, Tornado, Extreme Cold, and Winter Storm. The top-right screenshot shows the 'Individual Assistance' section with radio buttons for Owner or Renter, and a 'Choose the type of dwelling' section with options for Single-Family, Multi-Family, and Manufactured Home. The bottom-right screenshot shows the 'Location of the damage' section with a map and coordinates (42°40'N 84°40'W ± 65 m) and a section for providing photos of the damage, including a site identification photo and context images.





# DA Application

## Public Assistance (PA)

- Applicant Type
  - Near water?
  - Hazardous debris?
- Category A – G
- Special Considerations
- Cost Estimates
- Photos
- Location

The image displays three overlapping screenshots of a mobile application titled "Local Preliminary Damage Assessment - PA". The app is running on a Verizon device at 1:16 PM with 100% battery.

**Top Screenshot (Main Form):**

- Date Assessment Occurred:** January 3, 2018
- Street Address:** (Empty field)
- Building/Suite/Lot:** (Empty field)
- City/Town:** (Empty field)
- EM Program:** (Empty field)
- State:** Michigan
- Zip Code:** (Empty field)
- Public Assistance Section:**
  - Applicant Name:** (Empty field)
  - Applicant Type:**
    - ☐ Government Entity
    - ☐ Private Non-Profit
  - Which type of assessment would you like to submit?**
    - ☐ Debris Removal (A)
    - ☐ Emergency Protective Measures (B)
    - ☐ Roads and Bridges (C)
    - ☐ Water Control Facilities (D)
    - ☐ Buildings, Equipment and Content (E)
    - ☐ Utilities (F)
    - ☐ Beaches, Parks, Transit, and Other (G)

**Middle Screenshot (Special Considerations):**

- Special Considerations**
  - Does the work occur in or near water?**
    - ☐ Yes
    - ☐ No
    - ☐ Unknown
  - Will there be ground disturbing activities associated with the work?**
    - ☐ Yes
    - ☐ No
    - ☐ Unknown
  - Is the damaged facility older than 45 years?**
    - ☐ Yes
    - ☐ No
    - ☐ Unknown
  - Are there hazardous debris disposal issues?**
    - ☐ Yes
    - ☐ No
    - ☐ Unknown
  - Is the facility covered under an existing insurance policy for the hazard?**
    - ☐ Yes
    - ☐ No
    - ☐ Unknown

**Bottom Screenshot (Cost Section):**

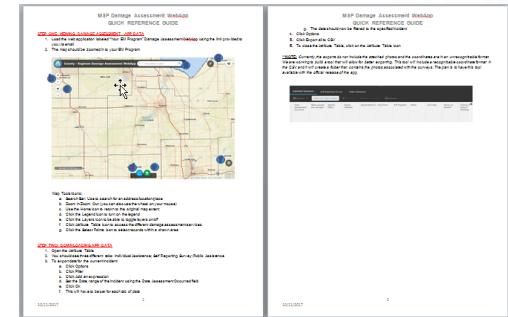
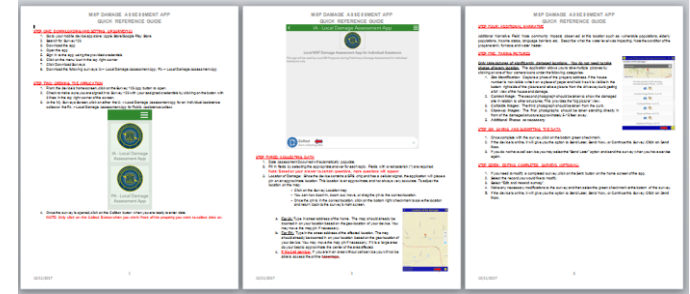
- Cost**
  - Is the work complete?**
    - ☐ Yes
    - ☐ No
    - ☐ Unknown
  - Were emergency repairs necessary to lessen an immediate threat to life, safety or property? (separate from restoration costs)**
    - ☐ Yes
    - ☐ No
    - ☐ Unknown
  - Enter cost of emergency repairs (Category's A & B):** (Empty field with dollar sign icon)
  - Enter cost of the permanent work (Category's C-G):** (Empty field with dollar sign icon)
  - How was the cost estimate developed?**
    - ☐ Real Cost (based on submitted receipts, invoices, and other documentation)
    - ☐ Certified Estimate (developed and signed by engineer or other qualified personnel)
    - ☐ Calculated Estimate (based off of cost/rate schedule information)
    - ☐ Informed Estimate (based on historic costs for similar type of work)
    - ☐ Best Guess (made due to unknown cost, variables, or unknown damage)
  - Additional Narrative:** (Empty text area)
  - Location of the Damage:** (Empty field with a checkmark icon)





# DA Application Training

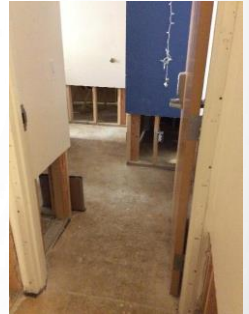
- Training app for practice
- Quick reference card
- Pictures with descriptions
- Adapter for mobile device to projector/display
- Training before deployment



# DA Application

## Deployment

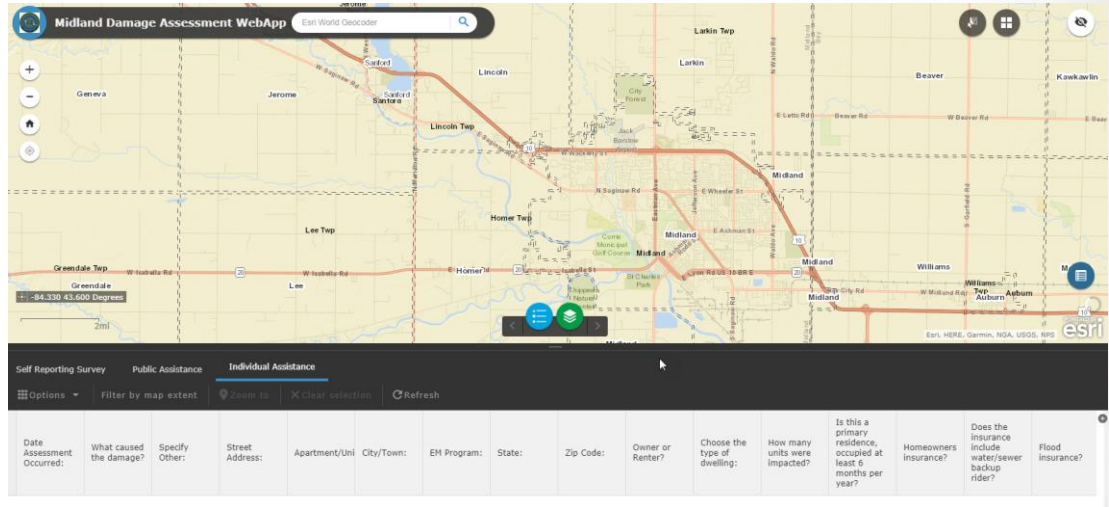
- Install Survey123 app, maps, and updates
- Full battery
- Offline maps loaded
- Spare iPads, fully configured (each team had 1 spare) 4 teams for IA, 4 teams for PA
- Paper forms as last resort
- Each night, iPads were collected and tested
- Total data and compare with FEMA



# DA Application

## Web Application

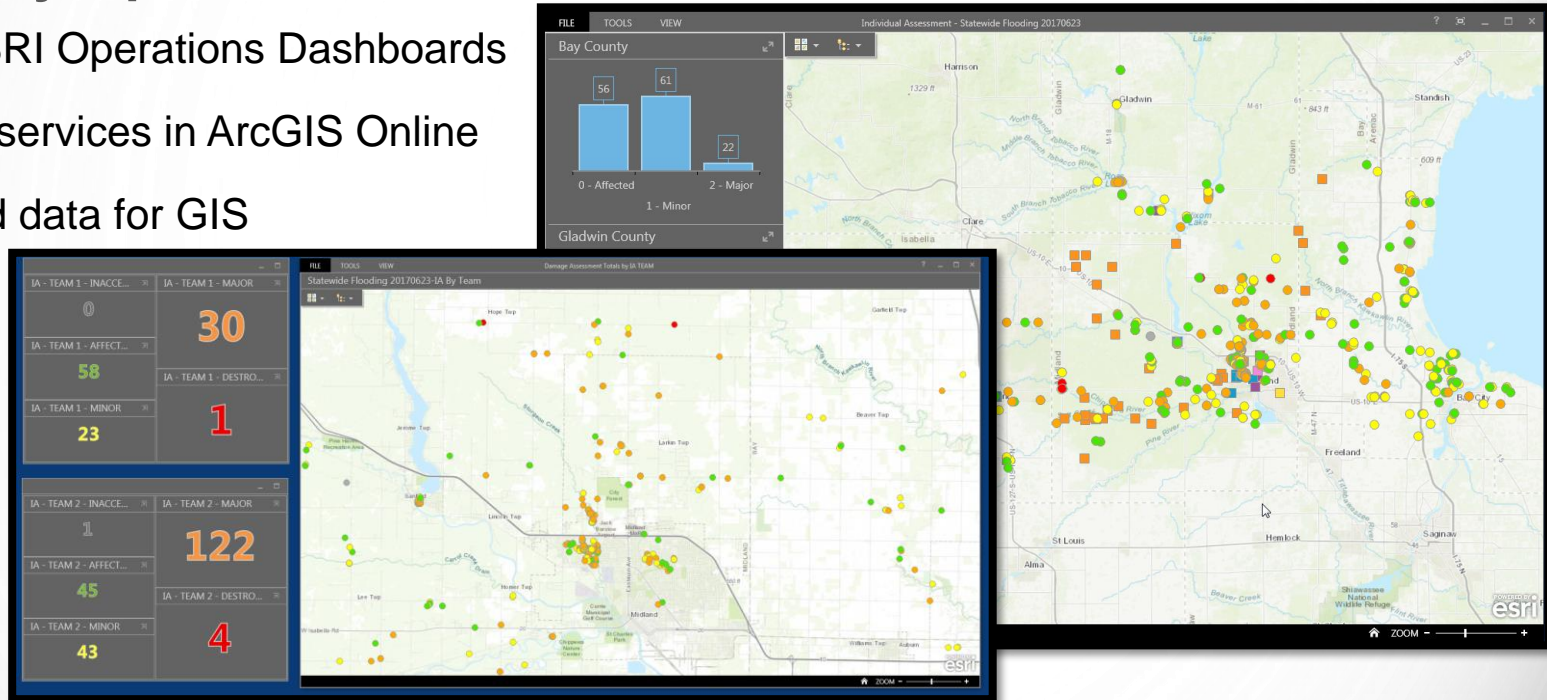
- Customized for each Emergency Management program
- Browse data on map using desktop/laptop computer
- Export data



# DA Application

## Emergency Operations Centers

- Utilize ESRI Operations Dashboards
- Use web services in ArcGIS Online
- Download data for GIS





# DA Application

## Challenges

- Form Design – Asking the correct questions and wording
- User accounts
- iPad updates and charging
- No management platform for patching/updating iPads
- Offline map preparation
- Loading data to MI CIMS



# Testing Groups

- 
- A map of Michigan showing the distribution of the Eastern Tule Wren. The map is divided into counties. Red-shaded counties indicate the presence of the species. The distribution is concentrated in the Upper Peninsula and the Lower Peninsula, with a notable gap in the central Lower Peninsula.

- Need for Self Reporting App for the public
- Need to export photos
- Need to make MI CIMS process easier

# DA Application

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## Follow Up Items

- Purchased more ArcGIS Online Credits and User Accounts
- Acquiring additional equipment (ruggedized tablets) for testing and support
- Working to improve MI CIMS process
- Building tool to rename photos and summarize data
- Automating backups of cloud data
- Security concerns – passwords and email accounts



# Concluding Remarks

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EMERGENCY MANAGEMENT & HOMELAND SECURITY DIVISION



# Concluding Remarks

- Try out new technology before disaster
- Consult with GIS staff when working with data that has location information
- Develop and maintain relationships within and surrounding your communities



# Contact Information

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McCormickM@michigan.gov

Michigan State Police

Emergency Management and Homeland Security Division

[www.michigan.gov/emhsd](http://www.michigan.gov/emhsd)

